

Learning Objectives

- ❖ To multiply 4-digits by 2-digits using long multiplication
- ❖ To divide 4-digits by 2-digits using long division
- ❖ To divide 4-digits by 2-digits using short division
- ❖ To interpret remainders as fractions and whole numbers
- ❖ To round remainders in the appropriate contexts
- ❖ To be able to perform mental calculations, with mixed operations and large numbers
- ❖ To be able to identify common factors, multiples and prime numbers
- ❖ To be able to use the order of operations (BODMAS)
- ❖ To solve addition and subtraction multi-step problems in context
- ❖ To be able to choose the correct operations in multi-step problems
- ❖ To be able to solve problems involving all four operations
- ❖ To use estimation to check answers

Order of Operations

B	Brackets	$10 \times (4 + 2) = 10 \times 6 = 60$
O	Order	$5 + 2^2 = 5 + 4 = 9$
D	Division	$10 + 6 \div 2 = 10 + 3 = 13$
M	Multiplication	$10 - 4 \times 2 = 10 - 8 = 2$
A	Addition	$10 \times 4 + 7 = 40 + 7 = 47$
S	Subtraction	$10 \div 2 - 3 = 5 - 3 = 2$

Addition and Subtraction

	4	5	8	6	4
+	2	3	4	9	7
	6	9	3	6	1
		1	1	1	

	3	5	6 7	13 4	1 2
-		3	4	7	6
	3	2	2	6	6

A prime number has only 1 and itself as factors: 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43

A composite number has factors other than 1 and itself.

Numbers

Square numbers result from a number being multiplied by itself (e.g. $5 \times 5 = 25$):

1, 4, 9, 16, 25, 36, 49, 64, 81, 100

Cube numbers result from a number being multiplied by itself twice ($2 \times 2 \times 2 = 8$):

1, 8, 27, 64, 125

Key Vocabulary

add
plus
total
make
sum
more
altogether
increase
combined

subtract
leave
difference
less
minus
reduce
decrease
take away

multiply
product
lots of
times
as much as
groups of

divide
average
evenly
shared
split

place value

inverse

Multiplication and Division

1	✗	✗	
	1	5	4
×		2	6
	9	2	4
3	0	8	0
4	0	0	4
1	1		

Start with the ones.

$$154 \times 6 = 924$$

$$154 \times 20 = 3080$$

$$3080 + 924 = 4004$$

Short Division

Start from the left.

		4	4	0	· 5
12	5	⁵ 2	⁴ 8	⁶ 6	0

$$5 \div 12 = 0 \text{ r}5$$

$$52 \div 12 = 4 \text{ r}4$$

$$48 \div 12 = 4$$

$$6 \div 12 = 0 \text{ r}6$$

Long Division

		1	2	0	r	3
14	1	6	8	3		
	1	4	0	0		
		2	8	3		
		2	8	0		
				3		

What I Should Already Know:

- How to add and subtract whole numbers with more than 4-digits
- How to use formal written methods for addition
- How to add and subtract numbers mentally
- How to use rounding to check answers
- How to solve multi-step addition and subtraction problems in context
- How to find factor pairs of a number
- How to find common factors of two numbers
- The vocabulary of prime numbers, factors and composite numbers
- Prime numbers up to 19
- How to establish if a number is prime (up to 100)
- The formal written method for long multiplication
- How to mentally multiply and divide numbers
- How to divide 4-digits by a 1-digit number using short division
- How to interpret remainders
- How to multiply and divide by 10, 100 and 1000

Inverse Operations

Inverse means opposite. The opposite of addition is subtraction and therefore the opposite of subtraction is addition. Using an inverse operation is a useful way of checking your answer.